Year 2007 Water Quality Report

Fort Irwin routinely monitors for constituents in the drinking water according to Federal and State laws. Fort Irwin would like to present to you a summary of last years sampling results. This document also explains the results and provides contact information.

It is important to Fort Irwin that the customers be informed about water quality on Fort Irwin.

MUY IMPORTANTE
Este informe contiene informacion muy importante sobre su agua beber.
Traduzcalo `o hable con alguien que lo entienda bien.

If you have questions concerning this report contact:
Chris Woodruff, Water and Waste Water Manager, Fort Irwin DPW, 760-380-4987.

If you have questions concerning Fort Irwin Water System operation contact CH2MHill 760-386-9706

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Water Quality Monitoring

It is Fort Irwin's responsibility to provide water system customers with this year's Consumer Confidence Report (CCR). It is important to keep customers informed about the water quality and services delivered over the past year. Fort Irwin's goal is to provide a safe and dependable supply of drinking water. A percentage of the water pumped is run through a Reverse Osmosis Treatment Plant to meet drinking water standards.

In order to ensure that tap water is safe to drink, United States Environmental Protection Agency (USEPA) and the California Department of Health Services (DHS) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Last year, we conducted more than 5,500 tests for 167 different contaminants. This report covers monitoring from 1 January 2007 through 31 December 2007. The State allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's safe drinking water hotline at 1-800-426-4791 or at their web site www.epa.gov/safewater/.

Fort Irwin's Water Source

The type of water found at the NTC is groundwater, meaning it comes from underground aquifers from one of or a combination of three sources: 1) Bicycle Lake Basin, located approximately 2 miles northeast of the cantonment area adjacent to Barstow Road; 2) Langford Lake Basin, located approximately 2 miles southeast of the cantonment area adjacent to Langford Lake Road; and 3) Irwin Basin, located within the cantonment area itself. Fort Irwin pumped about 819 million gallons of water out of the ground last year. Fort Irwin's water system provides water to approximately 18,000 customers daily.

A source water assessment was completed in 1997 in the form of a document entitled "Ground Water Hydrology and Water Quality of Irwin Basin At Fort Irwin and The National Training Center, California". The assessment was conducted by US Geological Survey Information Services, Box 25286, Federal Center, Denver, CO 80255. Source water assessments for Langford Lake and Bicycle Lake Basins are not available. A copy of the Irwin Basin Assessment can be viewed at the County of San Bernardino District Office, 464 West 4th Street, Suite 437, San Bernardino, CA 92401. You may request a summary of the assessment be sent to you by contacting the DHS District Engineer at (909) 383-4328.

Unique to Fort Irwin

Fort Irwin's Water System is operated under a privatization contract with CH2MHill. As the system ownership is not transferred to CH2MHill, compliance responsibilities still reside with the U.S. Army.

Fort Irwin has two water systems. A Reverse Osmosis or RO System and a domestic use system or DU system. The domestic use (DU) water is higher than the California standard in Fluoride (MCL = 2 mg/L). DU water is intended for use in washing, cleaning, irrigation, and other non-potable uses.

To ensure Fort Irwin's water meet all standards, Fort Irwin treats a portion of the DU water in our water treatment plant. The Fort Irwin Water Treatment Plant uses a Reverse Osmosis treatment process to remove Contaminants and ensures our water meets all State and Federal Safe Drinking Water standards. The Reverse Osmosis treated water is the water you drink out of the RO system.

The RO system provides drinking and cooking water. RO water meets all drinking water standards including Fluoride and Arsenic.The RO system is visible in housing or your work space as either a RO water tab (shown at left) usually in the kitchen or a water fountain (shown at right).

System Improvements

Fort Irwin has completed the design of a new Water Treatment Facility. Our goal is that by the end of the year 2010, all water that our customer's use will meet or exceed the Federal and state MCLs. At that time the system ownership and permits will be transferred to CH2MHill.

Should Customers be Concerned?

Last year, Fort Irwin did not meet the bacteriological quality standards in the month of June 2007, specified by the State of California. Coliform bacteria were detected in both domestic and reverse osmosis water. On September 5 two samples from the RO system tested positive. Two resamples also tested positive from a different locations than the original test. A week later the DU system had one sample test positive and one resample also test positive. All other samples and resamples during both weeks tested negative. A thorough investigation was conducted and determined that a handling error was the root cause. Fort Irwin believes there was no risk to the population. California requires water systems with this issue to use the following public notice:

> *"Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other; potentially-harmful, bacteria that may be present. Coliforms were found in more samples than were allowed and this was a warning of potential problems."*

Fluoride concentrations in the DU system are higher than the acceptable State of California standard. California requires water systems to use the following public notice:

> *"Some people who drink water containing fluoride in excess of the federal MCL of 4 mg/L over many years may get bone disease, including pain and tenderness of the bones. Children who drink water containing fluoride in excess of the state MCL of 2 mg/L may get mottled teeth."*

Arsenic concentrations in the DU system are higher than the new Federal MCL of 10 µg/L. The state of California requires us to issue the following public notice:

> "*Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer. "*

MCL's are set at very stringent levels. To understand the risk of possible health effects described for regulated contaminants, customers should know that a person would have

to drink 2 liters of water every day at the MCL level during a lifetime to have a one-in-a-million chance of having the described health issues.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk of infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Water Conservation

Conserving water at Fort Irwin is important to the installation as breathing the air, without water there is no Fort Irwin. Fort Irwin is supported by our own water wells. Results from environmental engineering reports shows 70 years of available water. It is only replenished by the small amount of rain we receive annually, so we pump out much more than we receive.

Conserving water is very important for several reasons, the primary being the cost to have a water line brought in from another water provider would be very expensive and then we would have to buy our water rather than only paying the cost to pump it from the ground. Fort Irwin is very reliant on you the consumers to conserve this natural resource. Here are some tips on how to conserve water and help extend the life of our independence here at Fort Irwin:

Wash only full loads of laundry in your washing machine or full loads of dishes in your dishwasher. You'll not only save our water, but conserve energy as well.

Turn the water off. Minimize faucet use when shaving, brushing teeth and washing dishes. If your faucets or showerheads are leaking, call housing office to report it.

Shorten your shower time by one minute. Cut back on your shower time and you will save big time on water use. Or limit your showers to 5 minutes, this not only saves water but energy as well.

Don't pre-rinse your dishes. Check to see if you dishwasher can clean dishes without pre-rinsing them. Most newer dishwashers don't require pre-rinsing.

Reuse clean household water. Collect all the water that is wasted while waiting for the hot water to reach your faucet or showerhead. Use this to water your houseplants or outdoor planters. Do the same with water that is used to boil eggs and steam vegetables.

Use a car wash that recycles water. The car wash on Fort Irwin recycles water. Or if you wash your car at home use a device that stops the water flow while not in use.

Reduce lawn watering. Water your lawns in the evenings or early morning. Watering your lawn during the mid-day is not only harmful to your lawn, but most of the water evaporates before it can benefit you lawn. It is better to water deeply (long) two or three times a week instead of a short period everyday. Watering long forces the grass to have

long deep roots this makes for a healthier more drought resistant lawn. Use a timer to prevent over or under watering.

On the following pages are table containing summarized results of our monitoring. To understand these terms, Fort Irwin has provided the following definitions:

Non-Detects (ND) – Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/L) – One part per million corresponds to one minute in two years, or a single penny in $10,000.

Parts per billion (ppb) or Micrograms per liter – One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

Nephelmetric Turbidity Unit (NTU) – Nephelmetric turbidity units are a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Regulatory Action Level (AL) – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level Goal (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's are set by the U.S. Environmental Protection Agency (USEPA).

Public Health Goal (PHG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Primary Drinking Water Standard (PDWS) – MCL's for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Safe Drinking Water Act (SDWA) – Federal law which sets forth drinking water regulations.

Maximum Residual Disinfectant Level (MRDL) – The level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap.

Maximum Residual Disinfectant Level Goal (MRDLG) – The level of a disinfectant added for water treatment below which there is no known or expected risk to health. MRDLGs are set by the (USEPA).

Reverse Osmosis (RO) – The process which forces water through a special membrane with very small pores separating salts and other Contaminantes in a brine solution. When applied to water systems this process is energy intensive (high pressure pumps). On Fort Irwin RO also signifies the distribution system for water treated at the RO plant.

Disinfection Byproducts – Results from adding chlorine to the water to kill or suppress bacteria and other harmful organics. When chlorine is added it reacts with the carbon material forming byproducts that the USEPA and CA DHS believe is harmful.

The following tables present the results of our monitoring for the reporting period of 2007. In reading the tables, compare the MCL column to the Average Level Detected column.

Sources of Contaminants and Tables

Source of drinking water (both tap water and bottled water), include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and Herbicides, which may come from a variety or sources such as agriculture, urban storm water runoff, and residential uses.
- Organic Chemical contaminants, including synthetic and volatile organic chemicals that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities

Microbial monitoring is conducted on a weekly basis on Fort Irwin. This monitoring uses the coliform bacteria as an indicator for all microbial Contaminants. Coliform is used because it is present in the environment, it is more resistant than other bacteria and it is easy to detect. Table 1 has the results from bacteria monitoring.

		RO Water System		Domestic System				
Analyte	Unit	Highest Number of Positive Results	Number of Months exceeding MCL	Highest Number of Positive Results	Number of Months exceeding MCL	Maximum Contaminants Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Total Coliform Bacteria	Positive Samples per month	4*	1	2*	1	More than 1 positive sample in a month	No Positive	Naturally present in the environment

***** Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other; potentially-harmful, bacteria that may be present. Coliforms were found in more samples than were allowed and this was a warning of potential problems. Both events occurred in September 2007, an investigation was conducted and determined that a handling error was the root cause. Fort Irwin believes there was no risk to the population.

Lead and Copper Fort Irwin tests for Lead and Copper at selected taps in our water system. Results from the lead and copper testing indicate the corrosiveness of Fort Irwin's water. Lead and copper is leached from the plumbing inside the buildings. After you go on a long vacation it is a good idea to run the tap for a few minutes to flush the water lines. Table 2 contains the result from monitoring of Lead and Copper. Compare the 90% level to the Action level.

Table 2		RO Water System			Domestic System					
Analyte	Units	Maximum Detected	90 % Level*	Sites Tested	Maximum Detected	90 % Level*	Sites Tested	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Lead (Pb)	µg/L	ND	ND	30	ND	ND	30	AL** = 15	2	Internal corrosion of household water plumbing systems
Copper (Cu)	mg/L	0.130	0.089	30	0.120	0.082	30	AL** = 1.3	0.17	

*90% or more of the monitoring results were below this result.
**AL or regulatory *action level* is set by the California DHS. If exceeded preventive treatment is required, equivalent to a MCL.

Regulated and non regulated contaminants: Fort Irwin is required each year (or other period) to test for Contaminants the EPA and CA DHS are concerned about. We also test our water for indicators of water quality. These indicators of water quality help Fort Irwin provide the best water possible. Table 3 contains the monitoring results from 2007 (and some from 2006, 2005, and 2004).

Table 3		RO Water System		Domestic System		Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Analyte	Units	Range Detected	Average	Range Detected	Average			
EPA and State Regulated								
Arsenic (As)*	µg/L	ND - 5.9***	2.95***	2.8 - 38	13.8	10**	0.004	Erosion of natural occurring deposits
Barium (Ba)	mg/L			ND - 0.037	0.010	1	2	Erosion of natural occurring deposits

* Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
**The MCL changed from 50 ppb to 10 ppb as of 23 Jan 2006.
*** Data from Year 2006

Table 3 (Cont.)		RO Water System		Domestic System		Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Analyte	Units	Range Detected	Average	Range Detected	Average			
EPA and State Regulated (Cont.)								
Boron (B)*	µg/L			660-1400	962.9		1000	State Regulated No MCL: Erosion of natural occurring deposits
Cadmium (Cd)	µg/L	2.8**	2.8**	ND	ND	5	0.04	Erosion of natural occurring deposits
Chloride (Cl)	mg/L	12 – 21***	16***	45 - 290	95.8	500		Secondary Drinking Water Standard: Erosion of natural occurring deposits
Chromium (Cr), Total	µg/L			2 – 16	7.52	50	100	Erosion of natural occurring deposits
Hexalvent Chromium (Cr), Chromium VI	µg/L	ND - 1.5**	0.75**	1.3 - 13	5.42			
Color	S.C.U.	0 - 10	0.43	0-10	0.56	15		Secondary Drinking Water Standard: Naturally-occurring organic materials
Fluoride (F)****	mg/L	0.1 - 2.9	0.84	0.8 - 12	5.94	2.0	1	Erosion of natural occurring deposits; water additive that promotes strong teeth;
Haloacetic Acid (HAA5)	µg/L	ND - 5.3	1.3	ND - 9.1	1.89	60		Disinfection byproducts
Dibromoacetic Acid	µg/L	ND	ND	ND - 1.4	0.31			Part of HAA5
Dichloroacetic Acid	µg/L	ND - 1.8	0.45	ND	ND			Part of HAA5
Monobromoacetic Acid	µg/L	ND - 1.2	0.3	ND - 5.1	1.28			Part of HAA5
Monochoroacetic Acid	µg/L	ND - 3	1.33	ND - 6.2	0.95			Part of HAA5
Trichloroacetic Acid	µg/L	ND	ND	ND	ND			Part of HAA5

* Some men who drink water containing boron in excess of the notification level over many years may experience reproductive effects, based on studies in dogs.
** Data from Year 2004
*** Data from Year 2006
**** Some people who drink water containing fluoride in excess of the federal MCL of 4 mg/L over many years may get bone disease, including pain and tenderness of the bones. Children who drink water containing fluoride in excess of the state MCL of 2 mg/L may get mottled teeth.

Table 3 (Cont.)		RO Water System		Domestic System		Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Analyte	Units	Range Detected	Average	Range Detected	Average			
EPA and State Regulated (Cont.)								
Iron (Fe) *	µg/L	230 – 830**	493**	ND - 1200	72.2	300		Secondary Contaminant: Erosion of natural occurring deposits
Manganese (Mn)	µg/L			ND - 26	0.39	50		Erosion of natural occurring deposits
Nitrate (NO_3)	mg/L	4.2 - 5.8**	5.1**	2.8 - 23	13.3	45	45	Runoff and leaching from fertilizer use; leaching from septic tanks and sewer systems; erosion of natural deposits
pH	pH units	7.0 - 8.7	7.7	7.8 - 8.7	8.17			Secondary Drinking Water Standard: A measure how acidic the water is.
Selenium	µg/L			ND - 9.2	1.13	50	50	Erosion of natural occurring deposits
Specific Conductance	µS/cm			760 - 1500	937	1600		Substances that form ions when in water
Sulfate (SO_4)	mg/L	10 - 26**	18.3**	80 - 150	121	500		Secondary Drinking Water Standard: Erosion of natural occurring deposits
Surfactants (MBAS)	µg/L			ND - 50	ND	500		Secondary Drinking Water Standard: Municipal and industrial waste discharges
Total Dissolved Solids (TDS)	mg/L	32 - 1100	177	410 - 860	580	1000		Secondary Drinking Water Standard: Erosion of natural occurring deposits

* Iron was found at levels that exceed the secondary MCL of 300 ug/L. The Iron MCL was set to protect you against unpleasant aesthetic effects (e.g., color, taste, and odor) and the staining of plumbing fixtures (e.g., tubs and sinks) and clothing while washing.

** Data from Year 2006

Table 3 (Cont.)		RO Water System		Domestic System		Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Analyte	Units	Range Detected	Average	Range Detected	Average			
EPA and State Regulated (Cont.)								
Total Trihalomethanes (TTHM)	µg/L	4.2 - 12	6.5	ND - 7.9	3.2	80		Disinfection byproducts
Bromodichloromethane	µg/L	ND - 3.4	1.14	ND	ND			Part of TTHM
Bromoform	µg/L	0.78 - 2.1	1.3	ND - 7.2	2.7			Part of TTHM
Chloroform	µg/L	0 - 4.1	1.13	ND	ND			Part of TTHM
Dibromochloromethane	µg/L	0.56 - 3.4	1.52	0 - 0.99	0.26			Part of TTHM
Turbidity	NTU	0 – 1.8	0.15	0 – 8.4	0.49	5		Secondary Drinking Water Standard: Turbidity is a measure of the cloudiness of the water. NTU = Nephelometric Turbidity Units
Vanadium (V)	µg/L			28 - 42*	34*		50	Erosion of natural occurring deposits
Water Quality (Not Regulated)								
Calcium (Ca)	mg/L	0 - 39	6.14	5 - 80	23.4			Erosion of natural occurring deposits
Magnesium (Mg)	mg/L	ND - 7.1	0.62	1.6 - 12	4.5			Erosion of natural occurring deposits
Phosphorus, Total (P)	µg/L			ND - 310	21			Runoff and leaching from fertilizer use; Erosion of natural occurring deposits
Potassium (K)	mg/L	3**	3**	1.9 - 19	7.8			Erosion of natural occurring deposits
Sodium (Na)	mg/L	35**	35**	130 - 210	160			“Sodium” refers to the salt present in the water and is generally naturally occurring.

* Data from Year 2005

** Data from Year 2006

Table 3 (Cont.)		RO Water System		Domestic System		Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Analyte	Units	Range Detected	Average	Range Detected	Average			
Water Quality (Not Regulated) (Cont.)								
Strontium (Sr)	µg/L			ND - 670	290			Erosion of natural occurring deposits
Total Alkalinity	mg/L	3 – 120	25.9	110 - 230	156			Erosion of natural occurring deposits
Bicarbonate (HCO_3)	mg/L	3.7 - 140	31.5	130 - 280	190			Part of Alkalinity
Carbonate (CO_3)	mg/L	ND - 4.8						Part of Alkalinity
Total Hardness	mg/L	ND - 130	19.8	23 - 250	79			Erosion of natural occurring deposits: the sum of polyvalent cat ions present in the water, generally magnesium and calcium. The cat ions are usually naturally-occurring.
Reactive Silica	mg/L			16 - 100	49.5			Erosion of natural occurring deposits
Total Silica	mg/L			19 - 98	49.7			Erosion of natural occurring deposits, Generally interferes with treatment.